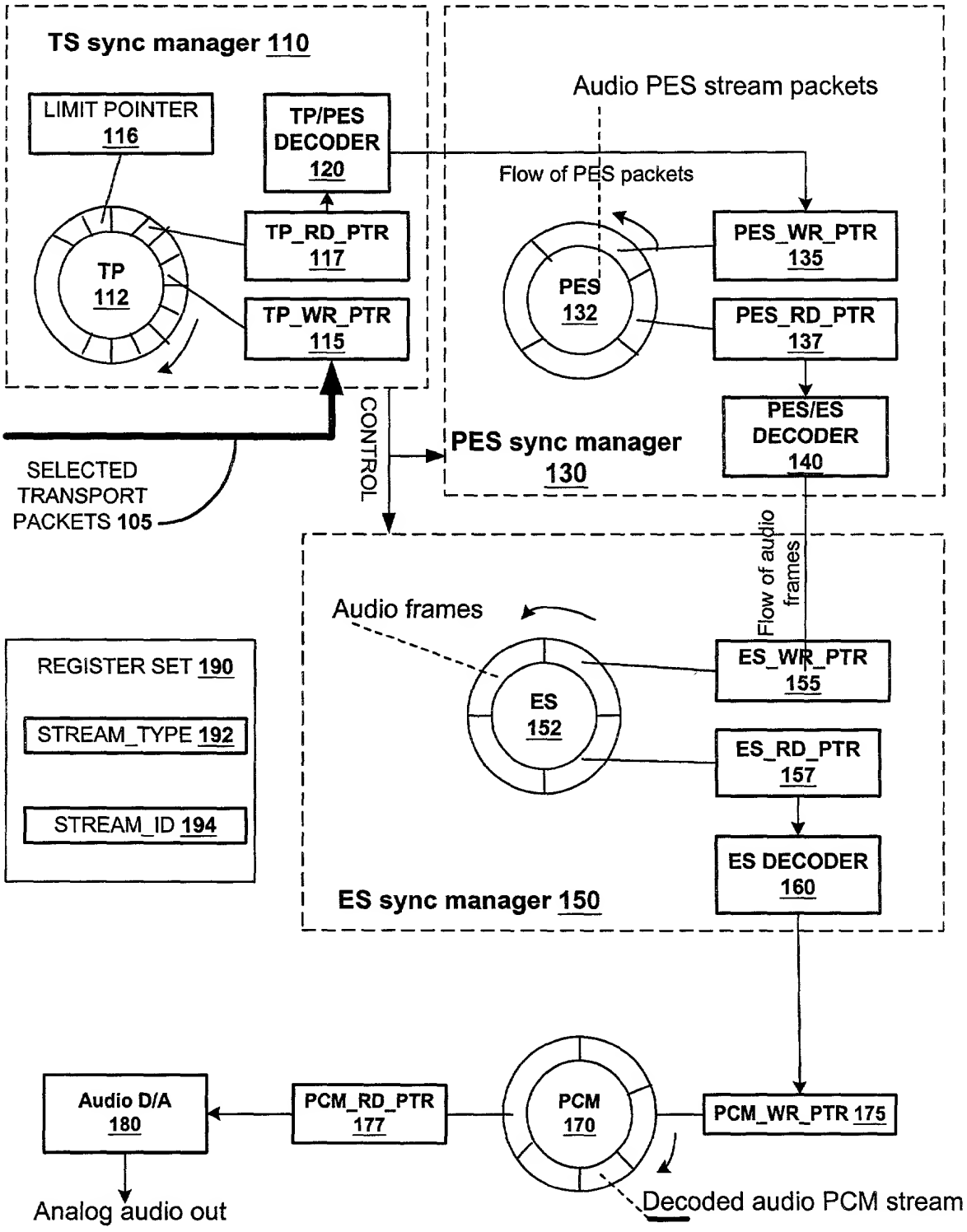
TS sync manager 110
LIMIT POINTER 116
TP/PES DECODER 120
TP 112
TP_RD_PTR 117
TP_WR_PTR 115
SELECTED TRANSPORT PACKETS 105
CONTROL
Audio PES stream packets
Flow of PES packets
PES 132
PES_WR_PTR 135
PES_RD_PTR 137
PES/ES DECODER 140
PES sync manager 130
Flow of audio frames
Audio frames
ES 152
ES_WR_PTR 155
ES_RD_PTR 157
ES DECODER 160
ES sync manager 150
REGISTER SET 190
STREAM_TYPE 192
STREAM_ID 194
PCM 170
PCM_WR_PTR 175
PCM_RD_PTR 177
Audio D/A 180
Analog audio out
Decoded audio PCM stream

FIG. 1

Value	Description
0x00	ITU-T | ISO/IEC reserved
0x01	ISO/IEC 11172-2 Video
0x02	ITU-T Rec. H.262 | ISO/IEC 13818-2 Video or ISO/IEC 11172-2 constrained parameter video stream
0x03	ISO/IEC 11172-3 Audio
0x04	ISO/IEC 13818-3 Audio
0x05	ITU-T Rec. H.222.0 | ISO/IEC 13818-1 private_sections
0x06	ITU-T Rec. H.222.0 | ISO/IEC 13818-1 PES packets containing private data
0x07	ISO/IEC 13522 MHEG
0x08	Annex A – DSM CC
0x09	ITU-T Rec. H.222.1
0x0A	ISO/IEC 13818-6 type A
0x0B	ISO/IEC 13818-6 type B
0x0C	ISO/IEC 13818-6 type C
0x0D	ISO/IEC 13818-6 type D
0x0E	ISO/IEC 13818-1 auxiliary
0x0F - 0x7F	ITU-T Rec. H.222.0 | ISO/IEC 13818-1 reserved
0x80 - 0xFF	User private

STREAM_TYPE
ASSIGNMENTS

FIG. 2

stream_id	Stream coding
1011 1100	program_stream_map
1011 1101	private_stream_1
1011 1110	padding_stream
1011 1111	private_stream_2
110x xxxx	ISO/IEC 13818-3 or ISO/IEC 11172-3 audio stream number x xxxx
1110 xxxx	ITU-T Rec. H.262 | ISO/IEC 13818-2 or ISO/IEC 11172-2 video stream number xxxx
1111 0000	ECM_stream
1111 0001	EMM_stream
1111 0010	ITU-T Rec. H.222.0 | ISO/IEC 13818-1 Annex B or ISO/IEC 13818-6_DSMCC_stream
1111 0011	ISO/IEC_13522_stream
1111 0100	ITU-T Rec. H.222.1 type A
1111 0101	ITU-T Rec. H.222.1 type B
1111 0110	ITU-T Rec. H.222.1 type C
1111 0111	ITU-T Rec. H.222.1 type D
1111 1000	ITU-T Rec. H.222.1 type E
1111 1001	ancillary_stream
1111 1010 ... 1111 1110	Reserved data stream
1111 1111	program_stream_directory

FIG. 3

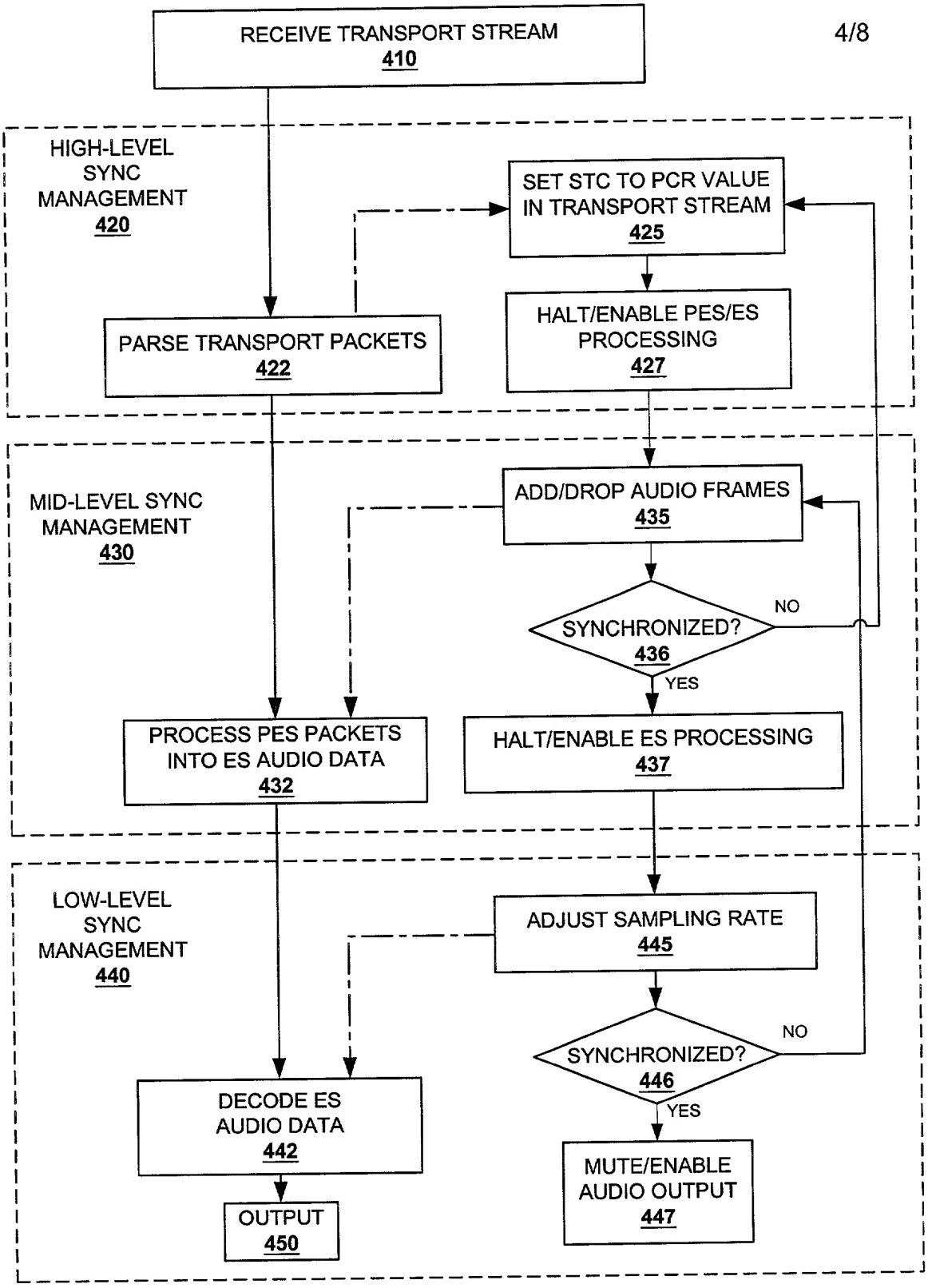
RECEIVE TRANSPORT STREAM
410
HIGH-LEVEL SYNC MANAGEMENT
420
SET STC TO PCR VALUE IN TRANSPORT STREAM
425
PARSE TRANSPORT PACKETS
422
HALT/ENABLE PES/ES PROCESSING
427
MID-LEVEL SYNC MANAGEMENT
430
ADD/DROP AUDIO FRAMES
435
SYNCHRONIZED?
436
NO
YES
PROCESS PES PACKETS INTO ES AUDIO DATA
432
HALT/ENABLE ES PROCESSING
437
LOW-LEVEL SYNC MANAGEMENT
440
ADJUST SAMPLING RATE
445
SYNCHRONIZED?
446
NO
YES
DECODE ES AUDIO DATA
442
MUTE/ENABLE AUDIO OUTPUT
447
OUTPUT
450

FIG. 4

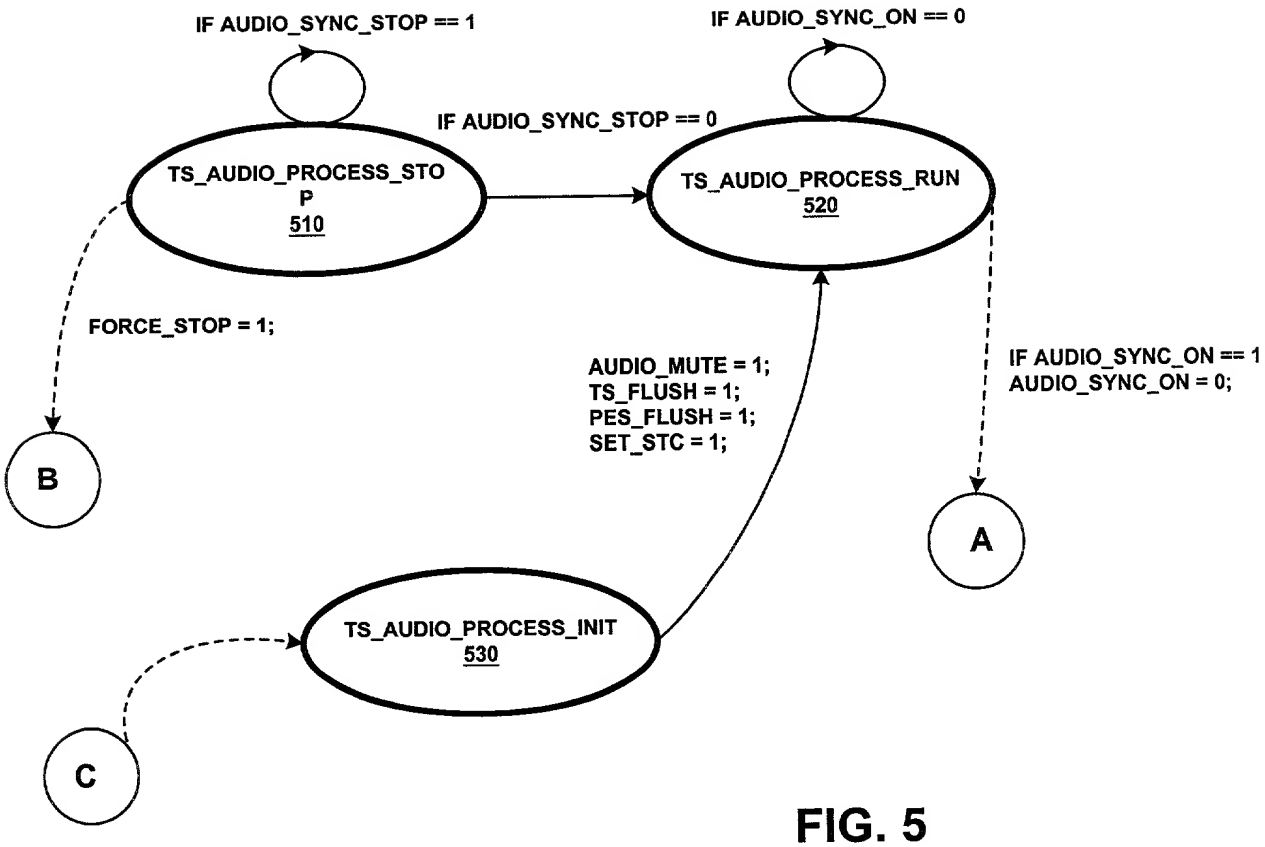
IF AUDIO_SYNC_STOP == 1
IF AUDIO_SYNC_ON == 0
IF AUDIO_SYNC_STOP == 0
TS_AUDIO_PROCESS_STOP
510
TS_AUDIO_PROCESS_RUN
520
FORCE_STOP = 1;
AUDIO_MUTE = 1;
TS_FLUSH = 1;
PES_FLUSH = 1;
SET_STC = 1;
IF AUDIO_SYNC_ON == 1
AUDIO_SYNC_ON = 0;
B
A
TS_AUDIO_PROCESS_INIT
530
C

FIG. 5

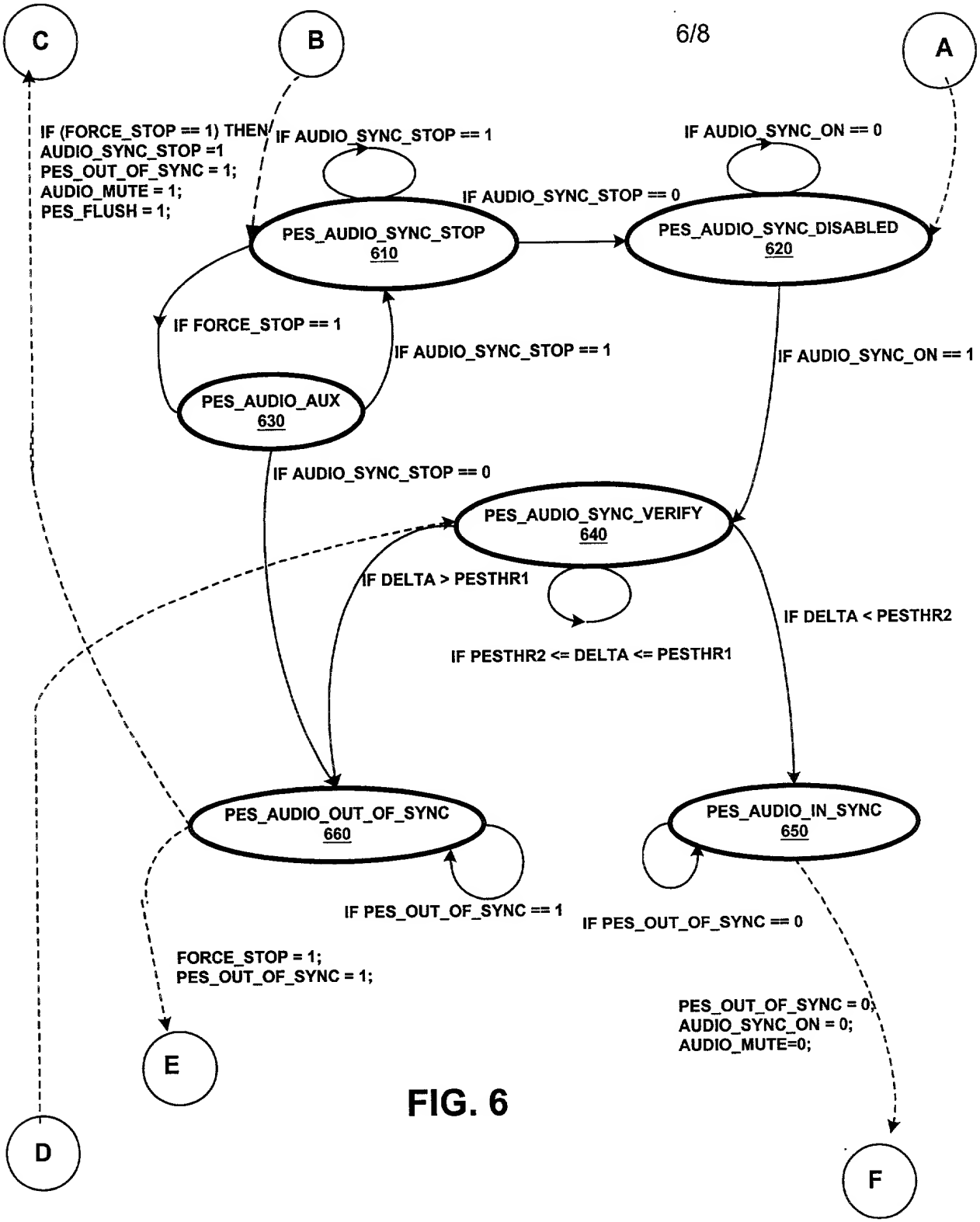
C
B
A
IF (FORCE_STOP == 1) THEN
AUDIO_SYNC_STOP =1
PES_OUT_OF_SYNC = 1;
AUDIO_MUTE = 1;
PES_FLUSH = 1;
IF AUDIO_SYNC_STOP == 1
IF AUDIO_SYNC_ON == 0
IF AUDIO_SYNC_STOP == 0
PES_AUDIO_SYNC_STOP
610
PES_AUDIO_SYNC_DISABLED
620
IF FORCE_STOP == 1
IF AUDIO_SYNC_STOP == 1
IF AUDIO_SYNC_ON == 1
PES_AUDIO_AUX
630
IF AUDIO_SYNC_STOP == 0
PES_AUDIO_SYNC_VERIFY
640
IF DELTA > PESTHR1
IF DELTA < PESTHR2
IF PESTHR2 <= DELTA <= PESTHR1
PES_AUDIO_OUT_OF_SYNC
660
PES_AUDIO_IN_SYNC
650
IF PES_OUT_OF_SYNC == 1
IF PES_OUT_OF_SYNC == 0
FORCE_STOP = 1;
PES_OUT_OF_SYNC = 1;
PES_OUT_OF_SYNC = 0;
AUDIO_SYNC_ON = 0;
AUDIO_MUTE=0;
E
D
F

FIG. 6

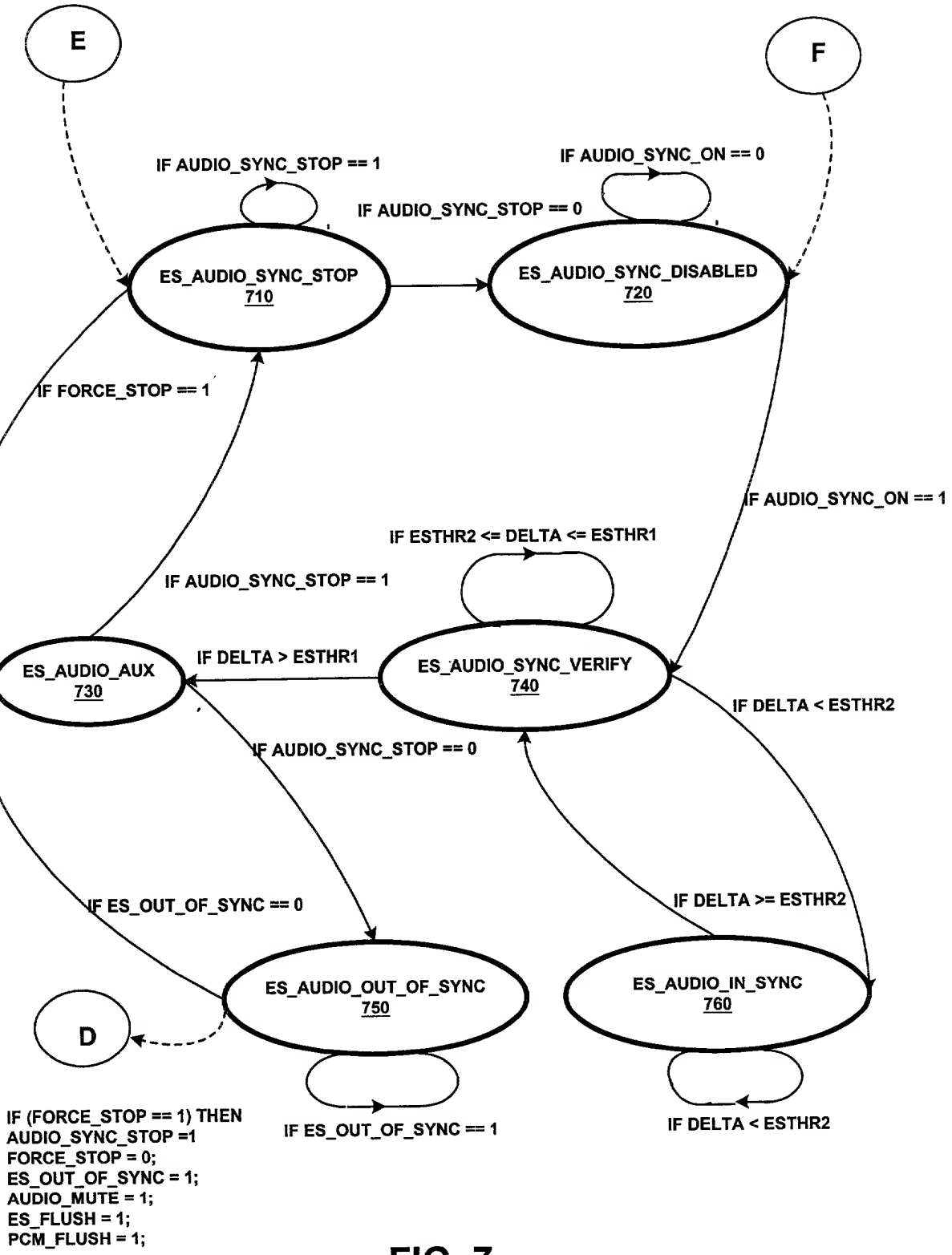
E
F
IF AUDIO_SYNC_STOP == 1
IF AUDIO_SYNC_ON == 0
IF AUDIO_SYNC_STOP == 0
ES_AUDIO_SYNC_STOP
710
ES_AUDIO_SYNC_DISABLED
720
IF FORCE_STOP == 1
IF AUDIO_SYNC_ON == 1
IF ESTHR2 <= DELTA <= ESTHR1
IF AUDIO_SYNC_STOP == 1
ES_AUDIO_AUX
730
IF DELTA > ESTHR1
ES_AUDIO_SYNC_VERIFY
740
IF DELTA < ESTHR2
IF AUDIO_SYNC_STOP == 0
IF ES_OUT_OF_SYNC == 0
IF DELTA >= ESTHR2
ES_AUDIO_OUT_OF_SYNC
750
ES_AUDIO_IN_SYNC
760
D
IF ES_OUT_OF_SYNC == 1
IF DELTA < ESTHR2
IF (FORCE_STOP == 1) THEN
AUDIO_SYNC_STOP =1
FORCE_STOP = 0;
ES_OUT_OF_SYNC = 1;
AUDIO_MUTE = 1;
ES_FLUSH = 1;
PCM_FLUSH = 1;

FIG. 7

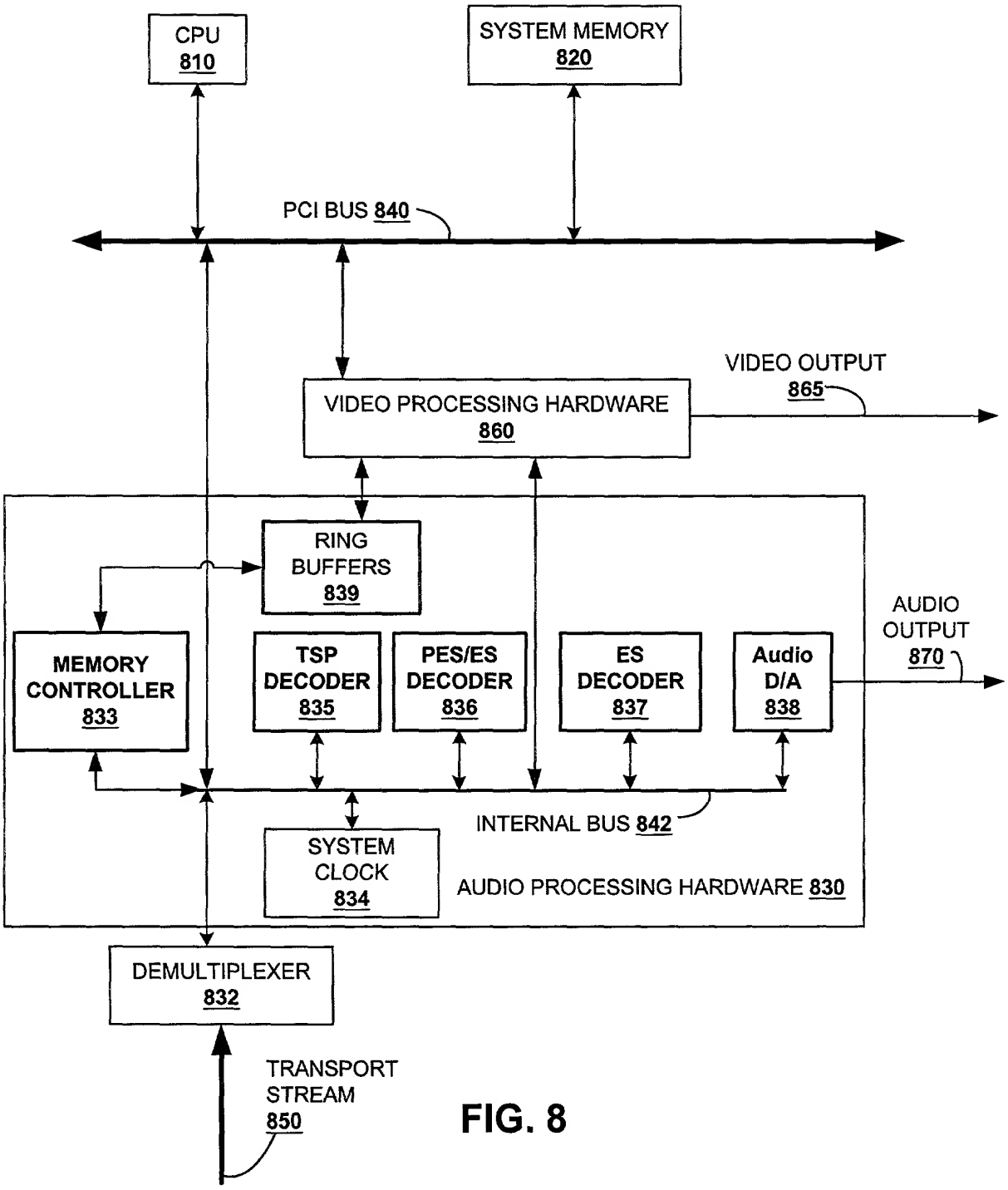
CPU
810
SYSTEM MEMORY
820
PCI BUS 840
VIDEO OUTPUT
865
VIDEO PROCESSING HARDWARE
860
RING
BUFFERS
839
AUDIO
OUTPUT
870
MEMORY
CONTROLLER
833
TSP
DECODER
835
PES/ES
DECODER
836
ES
DECODER
837
Audio
D/A
838
INTERNAL BUS 842
SYSTEM
CLOCK
834
AUDIO PROCESSING HARDWARE 830
DEMULTIPLEXER
832
TRANSPORT
STREAM
850

FIG. 8